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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention]It is related with the signal transmission method of the remote control which controls the receiver equipment which receives the signal output equipment or image, and sound which output an image and an audio signal, and is reproduced.

[0002]

[Description of the Prior Art]The network by 1394 is used for the method of controlling other connected conventional apparatus by a remote control signal like the method of controlling by infrared rays like JP,07-255092,A, or JP,10-155188,A.

[0003]

[Problem(s) to be Solved by the Invention]Thus, in the method of controlling other connected conventional apparatus by infrared rays in the method of controlling by a remote control signal. In the control method which the memory measure which accumulates the remote control cord of an infrared output part or other apparatus is required for the apparatus side to control, and used 1394. The circuit required in addition to remote control since it corresponds to 1394 connection was required, and in order to carry out remote control, the technical problem that the price of apparatus rose occurred.

[0004]

[Means for Solving the Problem]In order to solve a technical problem of a method of controlling other connected apparatus of said former by a remote control signal, in a method of this invention. By adding a remote control signal line which transmits to a transmission system from the receiver equipment side to information transmission cables sent out to receiver equipment from the transmission system side, such as an image and an audio signal, and transmitting a remote control signal to a transmission system from receiver equipment with a cable, A method which while was connected and controls apparatus via a remote control light sensing

portion by the side of another apparatus can be provided without adding special parts from parts constitution of apparatus of a simple substance which is not taking into consideration that receiver equipment and a transmission system carry out remote control of other apparatus. However, the following technical problems occur only by transmitting with a cable a remote control signal simply received by the receiver equipment side to the transmission system side.

\*\* An input terminal only for a remote control signal is prepared for a common microcomputer which decodes a remote control signal which conventional apparatus has only for one terminal. When a remote control signal received by a remote control light sensing portion by the side of a transmission system and a remote control signal received by a remote control light sensing portion by the side of receiver equipment are simultaneously inputted into one microcomputer terminal for the reason, a remote control signal will be in an interference state, and it will become impossible to decode correctly. \*\* Since a carrier frequency of a remote control signal transmitted from a remote control changes with a maker or apparatus, receive a remote control signal regardless of a maker or apparatus, and a remote control signal light sensing portion which can be decoded is needed. \*\* Remote control signal of long-distance transmission becomes blunt, and a device which does not become a signal which cannot be decoded with a microcomputer is needed. \*\* Even concern of a remote control signal line linked to an external instrument being directly linked with a microcomputer inside apparatus which has the possibility of destruction in surge, or a semiconductor of LSI, and breaking down simply is \*\*. Which technical problem can be considered. For the reason, two remote control signals, a remote control signal which a microcomputer of a transmission system obtains from a remote control signal light sensing portion of a transmission system, and a remote control signal transmitted from receiver equipment, are independently recognized as a means to solve a technical problem of \*\*, A method of controlling other connected apparatus by a remote control signal can be provided without adding special parts from composition of apparatus of a simple substance which is not taking into consideration that receiver equipment and a transmission system carry out remote control of other apparatus by having composition which controls a transmission system. \*\* Since arbitrary remote control signals which a receiver received are outputted to a transmission system as a means to solve a technical problem, said remote control signal is received by high impedance, By having composition which is provided with an output buffer which outputs a signal of the same phase as an inputted remote control signal by low impedance and for which a remote control signal is outputted to a transmission system by low impedance from a connector by the side of receiver equipment, A method of controlling other connected apparatus by a remote control signal can be provided. \*\* By having SW which controls by microcomputer control the enter end of a signal line by which a remote control signal which received light with receiver equipment is transmitted to a receiver equipment connector as a means to solve a technical problem, By making SW into an open condition,

when a microcomputer detects the state where a cable is not connected to the receiver equipment side connector and a cable is not connected to the receiver equipment side connector, A method of controlling apparatus of connected others it becomes possible to protect a circuit inside receiver equipment against surge from the outside by a remote control signal can be provided.

[0005]It uses that it becomes possible to support an established state of a transmission system which fitted receiver equipment most when receiver equipment acquired information on a sending signal and a connection device from the receiver equipment side, A method of controlling apparatus of connected others which realizes a function which announces optimum setting by the side of a transmission system to a user by onscreen display by the side of a receiving set by a remote control signal can be provided.

[0006]It uses that it becomes possible to control an established state of a transmission system which similarly fitted receiver equipment most when receiver equipment acquired information on a sending signal and a connection device from the receiver equipment side, A control code of a connection device accumulated in a memory by the side of a receiving set can be read, and a method of controlling apparatus of connected others which realizes a function controlled so that a transmission system will be in an optimum setting state by remote control signal transmission from the receiver equipment side to the transmission system side with a remote control signal can be provided.

[0007]

[Embodiment of the Invention]The receiver equipment which the invention of this invention according to claim 1 receives the signal output equipment, image, and sound which output an image and an audio signal, and is reproduced is connected, In the AV equipment connected state provided with the connection method which has the function to transmit the remote control signal decoded by the remote control light sensing portion by the side of receiver equipment to a transmission system from receiver equipment, The remote control signal which the receiving set light sensing portion detected arbitrary remote control infrared signals, and was detected by said receiving set light sensing portion is outputted to the transmission system side from the receiver equipment side by the cable which connected between receiver equipment and a transmission system, When a transmission system receives the remote control signal from the receiver equipment side and decodes with the microcomputer of a transmission system, even if it operates it by turning the remote control transmitter for transmission systems with directivity in the direction of receiver equipment, it has the operation that the transmission system connected to receiver equipment is controllable.

[0008]The receiver equipment which the invention of this invention according to claim 2 receives the signal output equipment, image, and sound which output an image and an audio signal, and is reproduced is connected, In the AV equipment connected state provided with the

connection method which has the function to transmit the remote control signal decoded by the remote control light sensing portion by the side of receiver equipment to a transmission system from receiver equipment, The cable which connected between receiver equipment and a transmission system transmits the remote control signal which the receiving set light sensing portion detected arbitrary remote control infrared signals, and was detected by said receiving set light sensing portion to the transmission system side from the receiver equipment side, The transmitter microcomputer provided with the terminal of the remote control signal input only from the receiver equipment side decodes the remote control signal transmitted from the receiver equipment side, and control operation and the state of a transmission system, and. Said transmitter microcomputer provided with the terminal of the remote control signal input only from a transmitter light sensing portion decodes the remote control signal which the transmitter light sensing portion with which the transmission system itself was equipped transmits, and control operation and the state of a transmission system, and. Interference is not caused even if the remote control signal from a receiving set light sensing portion and the remote control signal from a transmitter light sensing portion are simultaneously inputted into a transmitter microcomputer by making it the microcomputer operation specification which controls a transmitter with a priority to the remote control signal inputted into the independent dedicated terminal. It has the operation that a transmission system is correctly controllable.

[0009]The receiver equipment which the invention of this invention according to claim 3 receives the signal output equipment, image, and sound which output an image and an audio signal, and is reproduced is connected, In the AV equipment connected state provided with the connection method which has the function to transmit the remote control signal decoded by the remote control light sensing portion by the side of receiver equipment to a transmission system from receiver equipment, The cable which connected between receiver equipment and a transmission system transmits the remote control signal which the receiving set light sensing portion detected arbitrary remote control infrared signals, and was detected by said receiving set light sensing portion to the transmission system side from the receiver equipment side, A remote control signal changeover switch chooses the remote control signal inputted into the microcomputer terminal for remote control signal decoding from the remote control signal transmitted from the receiver equipment side, and the remote control signal outputted from the transmitter light sensing portion of the transmission system itself, By controlling said changeover switch by control by the mechanical switch or an electrical signal, Even if the remote control signal from a receiving set light sensing portion and the remote control signal from a transmitter light sensing portion exist in a transmission system simultaneously, The microcomputer terminal for remote control signal decoding can be shared by the receiver equipment side microcomputer signal and the transmission system side microcomputer signal, and interference is not caused but it has the operation that a transmission system is correctly

controllable.

[0010]The receiver equipment which the invention of this invention according to claim 4 receives the signal output equipment, image, and sound which output an image and an audio signal, and is reproduced is connected, In the AV equipment connected state provided with the connection method which has the function to transmit the remote control signal decoded by the remote control light sensing portion by the side of receiver equipment to a transmission system from receiver equipment, The cable which connected between receiver equipment and a transmission system transmits the remote control signal which the receiving set light sensing portion detected arbitrary remote control infrared signals, and was detected by said receiving set light sensing portion to the transmission system side from the receiver equipment side, A remote control signal changeover switch chooses the remote control signal inputted into the microcomputer terminal for remote control signal decoding from the remote control signal transmitted from the receiver equipment side, and the remote control signal outputted from the transmitter light sensing portion of the transmission system itself, When a remote control signal detector circuit detects the existence of the remote control signal inputted from the receiver equipment side and it is detected that the remote control signal is inputted, Even if the remote control signal from a receiving set light sensing portion and the remote control signal from a transmitter light sensing portion exist in a transmission system simultaneously when a remote control signal detector circuit or a microcomputer outputs a control signal to a switching circuit so that only arbitrary periods may choose the remote control signal inputted from the receiver equipment side, Can share the microcomputer terminal for remote control signal decoding by the receiver equipment side microcomputer signal and the transmission system side microcomputer signal, and it comes, And since the receiving set side remote control signal becomes dominance automatically when the receiving set side remote control signal is inputted into a transmission system, interference is not caused but it has the operation that a transmission system is correctly controllable without a user's setting out. If the transmitter side remote control signal line is equipped with a remote control signal detector circuit, the transmitter side remote control signal can consider it as setting out which becomes dominance to the receiving set side remote control signal.

[0011]The receiver equipment which the invention of this invention according to claim 5 receives the signal output equipment, image, and sound which output an image and an audio signal, and is reproduced is connected, In the AV equipment connected state provided with the connection method which has the function to transmit the remote control signal decoded by the remote control light sensing portion by the side of receiver equipment to a transmission system from receiver equipment, An output buffer circuit with sufficient drive capability which can transmit the remote control signal which the receiving set light sensing portion detected arbitrary remote control infrared signals, and was detected by said receiving set light sensing

portion over long distances wins popularity by high impedance, The signal processed into the signal of the inputted remote control signal, equiphase, a reversal phase, or arbitrary signal amplitude levels is outputted by low impedance, The cable which connected between receiver equipment and a transmission system transmits the remote control signal outputted from the output buffer circuit to the transmission system side from the receiver equipment side, When a transmission system receives the remote control signal from the receiver equipment side and the microcomputer of a transmission system decodes the remote control signal transmitted from the television equipment side, For example, also in long-distance cable transmission of 5000 millimeters or more, have the operation that the remote control signal by the side of a receiver machine can be transmitted to a transmitter machine side, and. It has the operation of amending the different remote control signal level and polar difference between apparatus.

[0012]The receiver equipment which the invention of this invention according to claim 6 receives the signal output equipment, image, and sound which output an image and an audio signal, and is reproduced is connected, In the AV equipment connected state provided with the connection method which has the function to transmit the remote control signal decoded by the remote control light sensing portion by the side of receiver equipment to a transmission system from receiver equipment, A receiving set light sensing portion changes arbitrary remote control infrared signals into a remote control electrical signal, A switching circuit controls [ which connects said remote control signal line to the receiving set side connector / or or ] whether it dissociates, By controlling said switching circuit and connecting a remote control signal line to the receiving set side connector, when a signal receive section detects whether it is in the state where the signal is transmitted to the receiving set from a transmission system and is in a receive state about the signal from a transmitter, Operation that the receiving set side remote control signal is transmitted to the transmitter side automatically [ when it is in the state where a cable is connected between a receiving set and a transmitter, and the signal is transmitted from the transmitter side ] is performed, Malfunction in case operation of separating the receiving set side connector and a receiving set internal circuit is performed when neither the state where the transmitter side is not operating, nor the cable is connected, and connection is not made correctly is prevented, It has the operation of preventing a receiving set's transmitting a remote control signal at the time of power OFF in a transmitter, and a receiving set breaking down, and preventing destruction of the receiving set internal circuit by surge in the state where the cable is not connected.

[0013]The receiver equipment which the invention of this invention according to claim 7 receives the signal output equipment, image, and sound which output an image and an audio signal, and is reproduced is connected, In the AV equipment connected state provided with the connection method which has the function to transmit the remote control signal decoded by the remote control light sensing portion by the side of receiver equipment to a transmission system

from receiver equipment, A receiving set light sensing portion changes arbitrary remote control infrared signals into a remote control electrical signal, A switching circuit controls [ which connects said remote control signal line to the receiving set side connector / or or ] whether it dissociates, When the receiving set side connector detects that the cable is connected to receiver equipment, and the receiving set side connector and a cable control said switching circuit to a connected state \*\*\*\* case and connect a remote control signal line to the receiving set side connector, Operation that the receiving set side remote control signal is transmitted to the transmitter side automatically [ when it is in the state where the cable is connected between the receiving set and the transmitter ] is performed, When the cable is not connected, operation of separating the receiving set side connector and a receiving set internal circuit is performed, and it has the operation of preventing destruction of the receiving set internal circuit by surge in the state where the cable is not connected.

[0014]The receiver equipment which the invention of this invention according to claim 8 receives the signal output equipment, image, and sound which output an image and an audio signal, and is reproduced is connected, In the AV equipment connected state provided with the connection method which has the function to transmit the remote control signal decoded by the remote control light sensing portion by the side of receiver equipment to a transmission system from receiver equipment, A receiving set light sensing portion changes arbitrary remote control infrared signals into a remote control electrical signal, A signal receive section detects the information on a transmission system and a sending signal, and transmits to a receiving set microcomputer, By carrying out an OSD display on a display, in order that a receiving set microcomputer may distinguish the established state of the transmission system which fitted the receiving set and the receiving set most and an OSD signal generator may tell a user about optimum setting information according to judgment directions of a receiving set microcomputer, A user has the operation that the optimum setting of the transmitter according to a sending signal and a receiving set can be recognized.

[0015]The receiver equipment which the invention of this invention according to claim 9 receives the signal output equipment, image, and sound which output an image and an audio signal, and is reproduced is connected, In the AV equipment connected state provided with the connection method which has the function to transmit the remote control signal decoded by the remote control light sensing portion by the side of receiver equipment to a transmission system from receiver equipment, A receiving set light sensing portion changes arbitrary remote control infrared signals into a remote control electrical signal, A signal receive section detects the information on a transmission system and a sending signal, and transmits to a receiving set microcomputer, A receiving set microcomputer distinguishes the established state of the transmission system which fitted the receiving set and the receiving set most, and setting out of a receiving set is set as an optimum state, A remote control cord applicable based on

connection device information is chosen from the receiving set side memory which accumulated the remote control cord of the typical connection transmission system of each maker, The remote control signal of the transmission system to which the remote control signal generation part was connected is generated, The transmitter side is controlled through a cable to become the optimal transmission system setting out to a receiving set, In order that an OSD signal generator may tell a user about optimum setting information and setting change information according to judgment directions of a receiving set microcomputer, by carrying out an OSD display on a display, a user recognizes the optimum setting of the transmitter according to a sending signal, and a receiving set, and. It has the operation that setting out of a transmitter and a receiving set can be changed automatically.

[0016]The receiver equipment which the invention of this invention according to claim 10 receives the signal output equipment, image, and sound which output an image and an audio signal, and is reproduced is connected, In the AV equipment connected state provided with the connection method which has the function to transmit the remote control signal decoded by the remote control light sensing portion by the side of receiver equipment to a transmission system from receiver equipment, A signal receive section detects the information on a transmission system and a sending signal, and transmits to a receiving set microcomputer, The remote control signal of the transmission system which the remote control signal generation part read information from the receiving set memory which accumulated the control code of the typical connection transmission system of each maker, and was connected is generated, A false remote control display for an OSD generating part to perform transmitter motion control is displayed on a display, By the remote control of a receiving set operating the false remote control on OSD, choosing equipment operation, and directing generating of the remote control signal with which a receiving set microcomputer corresponds to selection of operation to a remote control signal generation part, Even if there is no remote control of a transmission system, it has the operation that motion control of a transmission system can be performed in OSD selection of a receiving set.

[0017]In the invention of said claim 10 the invention of this invention according to claim 11, By carrying out by writing in the control code information of the receiving set memory which is accumulating the control code of the typical connection transmission system of each maker, and connecting external instruments, such as exclusive equipment, a personal computer, and a cellular phone, to an information write-in terminal, Even if a new control code and a special transmitter machine code are written in a receiving set memory and an uncontrollable transmitter machine is commercialized after receiver sale, it has the operation that a transmitter changes into a controllable state from a receiver end. The information write-in terminal for external equipment connection has the method of writing a receiving set memory content to a receiver by the method and receiver remote control operation using the terminal



which transmits the image, sound, and equipment information which are indicated to each claim of a method or this invention provided as a dedicated terminal, and changing into it.

[0018]The receiver equipment which the invention of this invention according to claim 12 receives the signal output equipment, image, and sound which output an image and an audio signal, and is reproduced is connected, In the AV equipment connected state provided with the connection method which has a function which carries out solemn \*\*\*\*\* of the remote control signal and transmitter remote control signal of receiver equipment, When a receiving set light sensing portion detects arbitrary remote control infrared signals, and it is outputted from said receiving set light sensing portion, and a buffer receives a \*\* remote control signal and a buffer outputs through a cable to external connection equipment by low impedance, It has the operation that the remote control signal which the receiving set light sensing portion detected can be transmitted to external connection equipment. On the other hand by a transmitter machine side, a transmitter light sensing portion detects arbitrary remote control infrared signals, A buffer receives the remote control signal outputted from said transmitter light sensing portion, and when a buffer outputs through a cable to external connection equipment by low impedance, it has the operation that the remote control signal which the transmitter light sensing portion detected can be transmitted to external connection equipment. The remote control signal outputted from the receiving set light sensing portion in television equipment and the remote control signal outputted from the transmitter light sensing portion, A receiving set microcomputer has the operation that television equipment is controllable, also in response to the remote control signal outputted also to the remote control signal outputted from a receiving set light sensing portion from a transmitter light sensing portion by being inputted into an OR circuit and inputting the output from an OR circuit into a receiving set microcomputer. On the other hand with a transmitter machine, the remote control signal outputted from the transmitter light sensing portion, and the remote control signal outputted from the receiving set light sensing portion in a similar manner, A transmitter microcomputer has the operation that a transmitter machine is controllable, also in response to the remote control signal outputted also to the remote control signal outputted from a receiving set light sensing portion from a transmitter light sensing portion by being inputted into an OR circuit and inputting the output from an OR circuit into a transmitter microcomputer. A mutual remote control signal is transmitted and received and it has the operation that mutual equipment is controllable, with one remote control exclusive cable connected between a receiver equipment machine and a transmitter machine by these composition.

[0019]Hereafter, an embodiment of the invention is described using drawing 11 from drawing 1.

[0020](Embodiment 1) Drawing 1 shows the remote control signal transmission method according to claim 1. In drawing 1, the receiver equipment 1 has the operation which

reproduces an image and an audio signal with a display or a speaker. The arbitrary remote control transmitters 2 are turned to the receiver equipment 1, and are operated, and it has the operation which transmits a remote control infrared signal toward receiver equipment. The receiving set light sensing portion 3 has the operation which changes into an electrical signal the remote control infrared signal transmitted from said remote control transmitter 2. The receiving set microcomputer 4 receives and decodes the remote control signal changed into the electrical signal by said receiver light sensing portion 3, and has the operation which controls operation of receiver equipment. The receiving set receiving set connector 5 has the operation which connects to said receiver equipment 1 the cable for transmitting the remote control electrical signal changed by said television light sensing portion 3 to an external instrument. The transmission system 6 has the operation which transmits the information on a video signal, an audio signal, and others to said receiver equipment 1. The transmitter connector 7 has the operation which incorporates into a transmission system the remote control electrical signal transmitted from the receiver equipment 1 by connecting a cable. It is connected to said receiver equipment 1 and the transmission system 6, and the cable 8 has the operation which transmits a remote control electrical signal from the receiver equipment 1 to the transmission system 6, and has the electrical specification that a remote control signal does not deteriorate at the time of transmission. The transmitter microcomputer 9 receives and decodes the remote control electrical signal transmitted from said receiver equipment 1, and has the operation which controls operation of a transmission system. In drawing 1, although it is shown that the cable 8 is a cable only for remote control signal transmission, the connector only for video audio information and the connector only for remote control signal transmission are summarized to one, and there is also the method of transmitting and receiving all the signaling information by one cable. In the transmission medium of the multiple spindle constituted with two or more electric wires of DVI, the electric wire which transmits a remote control signal in a transmission medium is secured, and there is also the method of transmitting a remote control signal simultaneously with other information.

[0021](Embodiment 2) Drawing 2 shows the remote control signal transmission method according to claim 2. In drawing 2, the receiver equipment 1 has the operation which reproduces an image and an audio signal with a display or a speaker. The arbitrary remote control transmitters 2 are turned to the receiver equipment 1, and are operated, and it has the operation which transmits a remote control infrared signal toward receiver equipment. The receiving set light sensing portion 3 has the operation which changes the remote control infrared signal transmitted from said remote control transmitter 2 into the remote control signal 10 which is an electrical signal. The receiving set microcomputer 4 receives and decodes the remote control signal 10 changed into the electrical signal by said receiver light sensing portion 3, and has the operation which controls operation of receiver equipment. The receiving set

receiving set connector 5 has the operation which connects to said receiver equipment 1 the cable 8 for transmitting the remote control electrical signal changed by said television light sensing portion 3 to an external instrument. The transmission system 6 has the operation which transmits the information on a video signal, an audio signal, and others to said receiver equipment 1. The transmitter connector 7 has the operation which incorporates into a transmission system the remote control electrical signal 10 transmitted from the receiver equipment 1 by connecting the cable 8. It is connected to said receiver equipment 1 and the transmission system 6, and the cable 8 has the operation which transmits the remote control signal 10 from the receiver equipment 1 to the transmission system 6, and has the electrical specification that the remote control signal 10 does not deteriorate at the time of transmission. On the other hand, the transmitter light sensing portion 11 has the operation which changes the remote control infrared signal transmitted to the transmission system 6 into the remote control signal 12 which is an electrical signal. The transmitter microcomputer 9 receives and decodes two remote control signals, the remote control signal 8 transmitted from said receiver equipment 1, and the remote control signal 12 transmitted from the transmitter light sensing portion 11, with a terminal different, respectively, and has the operation which controls operation of receiver equipment. The transmitter microcomputer 9 has the operation which prevents generating of malfunction by giving priority to the input signal from one terminal, when two remote control signals are decoded simultaneously. There is also the method of considering as priority the remote control signal currently early decoded in time between two remote control signals as a method of preventing malfunction.

[0022](Embodiment 3) Drawing 3 shows the remote control signal transmission method according to claim 3. In drawing 3, the receiver equipment 1 has the operation which reproduces an image and an audio signal with a display or a speaker. The arbitrary remote control transmitters 2 are turned to the receiver equipment 1, and are operated, and it has the operation which transmits a remote control infrared signal toward receiver equipment. The receiving set light sensing portion 3 has the operation which changes the remote control infrared signal transmitted from said remote control transmitter 2 into the remote control signal 10 which is an electrical signal. The receiving set microcomputer 4 receives and decodes said remote control signal 10, and has the operation which controls operation of the receiver equipment 1. The receiving set connector 5 has the operation which connects the cable 8 for transmitting said remote control signal 10 to an external instrument to said receiver equipment 1. The transmission system 6 has the operation which transmits the information on a video signal, an audio signal, and others to said receiver equipment 1. The transmitter connector 7 has the operation which incorporates into the transmission system 6 the remote control signal 10 transmitted from the receiver equipment 1 by connecting the cable 8. It is connected to said receiver equipment 1 and the transmission system 6, and the cable 8 has the operation which

transmits the remote control signal 10 from the receiver equipment 1 to the transmission system 6. On the other hand, the transmitter light sensing portion 11 has the operation which changes into the remote control signal 12 of an electrical signal the remote control infrared signal transmitted to the transmission system 6. Said remote control signal 10 and said remote control signal 12 are inputted into the switching circuit 13, and it has in it the operation which chooses one side as an output. The changeover switch 14 is a mechanical switch with which the transmission system 6 was equipped, and has the operation which controls said switching circuit 13 by a user's operation, and chooses an output signal by it. The transmitter microcomputer 9 receives and decodes the output signal from said switching circuit 13, and has the operation which controls operation of a transmission system.

[0023](Embodiment 4) Drawing 4 shows the remote control signal transmission method according to claim 4. In drawing 4, the receiver equipment 1 has the operation which reproduces an image and an audio signal with a display or a speaker. The arbitrary remote control transmitters 2 are turned to the receiver equipment 1, and are operated, and it has the operation which transmits a remote control infrared signal toward receiver equipment. The receiving set light sensing portion 3 has the operation which changes the remote control infrared signal transmitted from said remote control transmitter 2 into the remote control signal 10 which is an electrical signal. The receiving set microcomputer 4 receives and decodes said remote control signal 10, and has the operation which controls operation of the receiver equipment 1. The receiving set connector 5 has the operation which connects to said receiver equipment 1 the cable for transmitting the remote control electrical signal changed by said television light sensing portion 3 to an external instrument. The transmission system 6 has the operation which transmits the information on a video signal, an audio signal, and others to said receiver equipment 1. The transmitter connector 7 has the operation which incorporates into the transmission system 5 the remote control signal 10 transmitted from the receiver equipment 1 by connecting a cable. It is connected to said receiver equipment 1 and the transmission system 6, and the cable 8 has the operation which transmits the remote control signal 10 from the receiver equipment 1 to the transmission system 6. On the other hand, the transmitter light sensing portion 11 has the operation which changes into the remote control signal 12 of an electrical signal the remote control infrared signal transmitted to the transmission system 6. Said remote control signal 10 and said remote control signal 12 are inputted into the switching circuit 13, and it has in it the operation which chooses one side as an output. The remote control signal detector circuit 15 has the operation which detects whether the remote control signal 10 is inputted into the transmission system 6. When the rising edge of the remote control signal 10 is detected and an output constitutes logic which is set to HIGH from mono- multi only during the arbitrary periods as an example of circuitry, if the remote control signal 10 is inputted, an output can realize the remote control signal detector

circuit set to HIGH. The integration circuit which integrates with the remote control signal 10, and the remote control signal detector circuit where an output will become HIGH if the remote control signal 10 is inputted by comparator which sets an output to HIGH for an integrated output when higher as compared with arbitrary potential than arbitrary potential are realizable as another example. The output signal of said switching circuit 13 is chosen by the output of such a remote control signal detector circuit 14. The transmitter microcomputer 9 receives and decodes the output signal from said switching circuit 13, and has the operation which controls operation of a transmission system. When the remote control signal 10 is inputted into the transmission system 6 by operation of said remote control signal detector circuit 15 and said switching circuit 13, it has the operation which chooses automatically as the remote control signal 10 the remote control signal inputted into said transmitter microcomputer 9.

[0024](Embodiment 5) Drawing 5 shows the remote control signal transmission method according to claim 5. In drawing 5, the receiver equipment 1 has the operation which reproduces an image and an audio signal with a display or a speaker. The arbitrary remote control transmitters 2 are turned to the receiver equipment 1, and are operated, and it has the operation which transmits a remote control infrared signal toward the receiver equipment 1. The receiving set light sensing portion 3 has the operation which changes the remote control infrared signal transmitted from said remote control transmitter 2 into the remote control signal 10 which is an electrical signal. The receiving set microcomputer 4 receives and decodes said remote control signal 10, and has the operation which controls operation of receiver equipment. The output buffer circuit 16 by receiving the remote control signal 10 by high impedance, and outputting the signal which changed the signal or amplitude level of equiphase or a reversal phase by low impedance, Distortion of the remote control signal by cable transmission is prevented, and it has the operation that it is receivable in the state which can distinguish a remote control signal by the transmitter side. The receiving set connector 5 has the operation which connects the cable for transmitting the remote control signal 10 to the external instrument 6 to said receiver equipment 1. The transmission system 6 has the operation which transmits the information on a video signal, an audio signal, and others to said receiver equipment 1. The transmitter connector 7 has the operation which incorporates into a transmission system the remote control electrical signal transmitted from the receiver equipment 1 by connecting a cable. It is connected to said receiver equipment 1 and the transmission system 6, and the cable 8 has the operation which transmits a remote control electrical signal from the receiver equipment 1 to the transmission system 6, and has the electrical specification that a remote control signal does not deteriorate at the time of transmission. The transmitter microcomputer 9 receives and decodes the remote control electrical signal transmitted from said receiver equipment 1, and has the operation which controls operation of a transmission system. By automatic setup using the connector machine

information that the output buffer circuit 16 is sent from user setting or a transmitter. By changing the remote control signal amplitude level of the change of the topology of equiphase or a reversal phase, 5V, or 3.3V, the difference of the remote control signal amplitude level and phase which change with apparatus is absorbed, and it has the operation which prevents poor external instrument control.

[0025](Embodiment 6) Drawing 6 shows the remote control signal transmission method according to claim 6. In drawing 6, the receiver equipment 1 has the operation which reproduces an image and an audio signal with a display or a speaker. The arbitrary remote control transmitters 2 are turned to the receiver equipment 1, and are operated, and it has the operation which transmits a remote control infrared signal toward the receiver equipment 1. The receiving set light sensing portion 3 has the operation which changes the remote control infrared signal transmitted from said remote control transmitter 2 into the remote control signal 10 which is an electrical signal. The receiving set microcomputer 4 receives and decodes said remote control signal 10, and has the operation which controls operation of receiver equipment. The switching circuit 17 has the operation which controls that the remote control signal of ten lines is connected to the receiving set connector 5, and is connected, or is cut. The receiving set connector 5 has the operation which connects the cable 8 for transmitting the remote control signal 10 to an external instrument to said receiver equipment 1. The transmission system 6 has the operation which transmits the information on a video signal, an audio signal, and others to said receiver equipment 1. The transmitter connector 7 has the operation which incorporates into a transmission system the remote control electrical signal 10 transmitted from the receiver equipment 1 by connecting the cable 8. It is connected to said receiver equipment 1 and the transmission system 6, and the cable 8 has the operation which transmits the remote control signal 10 from the receiver equipment 1 to the transmission system 6, and has the electrical specification that the remote control signal 10 does not deteriorate at the time of transmission. On the other hand, the transmitter memory 18 has the operation which memorizes the information peculiar to the transmission system 6 transmitted to the receiver equipment 1 and other external connection equipment other than the control data of the transmission system 6. The transmitter 19 has the operation which transmits the information peculiar to the transmission system 6 which shows the kind of transmission system memorized by the information on the video information and the voice modulation method of a signal format or aspect information, or surround and said transmitter memory 18 other than a video signal and an audio signal to the receiver 1. The receiver 20 has the operation which receives the signal and information which are transmitted from said transmitter 19. The receiver 20 transmits to said receiving set microcomputer 4, and transmission system information and video voice received state information the receiving set microcomputer 4, It distinguishes whether I may output the remote control signal 10 to the transmission system 6

based on transmission system information or video voice received state information, and has the operation of controlling said switching circuit 17. Since it becomes possible to distinguish whether I may transmit the remote control signal 10 to a transmission system by the receiving set microcomputer 4 recognizing transmission system information by these control actions, it has the operation that it can prevent a transmission system malfunctioning with the remote control signal 10 a priori. By the receiving set microcomputer's 4 recognizing a video voice receive state, and making the switching circuit 17 into an opened condition, when there is nothing to the case where the cable is not connected, or a receive state, Since the line linking directly to the microcomputer inside a receiver or the semiconductor of LSI can be made into an opened condition, it has the operation that the circuit and semiconductor with a high possibility of destruction can be protected against the surge inputted from a connection connector and a cable with an external instrument.

[0026](Embodiment 7) Drawing 7 shows the remote control signal transmission method according to claim 7. In drawing 6, the receiver equipment 1 has the operation which reproduces an image and an audio signal with a display or a speaker. The arbitrary remote control transmitters 2 are turned to the receiver equipment 1, and are operated, and it has the operation which transmits a remote control infrared signal toward the receiver equipment 1. The receiving set light sensing portion 3 has the operation which changes the remote control infrared signal transmitted from said remote control transmitter 2 into the remote control signal 10 which is an electrical signal. The receiving set microcomputer 4 receives and decodes said remote control signal 10, and has the operation which controls operation of receiver equipment. The switching circuit 17 has the operation which controls that the remote control signal of ten lines is connected to the receiving set connector 5, and is connected, or is cut. The receiving set connector 5 has the operation which connects the cable 8 for transmitting the remote control signal 10 to an external instrument to said receiver equipment 1. The transmission system 6 has the operation which transmits the information on a video signal, an audio signal, and others to said receiver equipment 1. The transmitter connector 7 has the operation which incorporates into a transmission system the remote control electrical signal 10 transmitted from the receiver equipment 1 by connecting the cable 8. It is connected to said receiver equipment 1 and the transmission system 6, and the cable 8 has the operation which transmits the remote control signal 10 from the receiver equipment 1 to the transmission system 6, and has the electrical specification that the remote control signal 10 does not deteriorate at the time of transmission. The cable 21 has the operation which transmits the video voice signal and video audio information which are transmitted from the transmission system 6, and information peculiar to a transmitter to the receiver equipment 1 from the transmission system 6. By a diagram, the cable 8 and the cable 21 can also be packed as the same cable, although shown as a different cable. The receiving set connector 5 detects that

said cable 21 and the cable 8 are connected to the receiver equipment 1, When a control signal is outputted to said switching circuit 17, said switching circuit 17 is connected when the cable is connected, and the cable is not connected, it has the operation of opening said switching circuit 17. Since the line directly linked with the microcomputer inside a receiver or the semiconductor of LSI by making the switching circuit 17 into an opened condition can be made into an opened condition by these control actions when the cable is not connected, It has the operation that the circuit and semiconductor with a high possibility of destruction can be protected against the surge inputted from a connection connector and a cable with an external instrument. It has the same operation, also when the cable 8 and the cable 21 are packed into one cable.

[0027](Embodiment 8) Drawing 8 shows the remote control signal transmission method according to claim 8. In Drawing 8, the receiver equipment 1 has the operation which reproduces an image and an audio signal with a display or a speaker. The arbitrary remote control transmitters 2 are turned to the receiver equipment 1, and are operated, and it has the operation which transmits a remote control infrared signal toward the receiver equipment 1. The receiving set light sensing portion 3 has the operation which changes into the remote control signal 10 the remote control infrared signal transmitted from said remote control transmitter 2. The receiving set microcomputer 4 receives and decodes said remote control signal 10, and has the operation which controls operation of receiver equipment. The receiving set connector 5 has the operation which connects the cable 8 for transmitting the remote control signal 10 to an external instrument to said receiver equipment 1. The transmission system 6 has the operation which transmits the information on a video signal, an audio signal, and others to said receiver equipment 1. The transmitter connector 7 has the operation which incorporates into a transmission system the remote control electrical signal 10 transmitted from the receiver equipment 1 by connecting the cable 8. It is connected to said receiver equipment 1 and the transmission system 6, and the cable 8 has the operation which transmits the remote control signal 10 from the receiver equipment 1 to the transmission system 6, and has the electrical specification that the remote control signal 10 does not deteriorate at the time of transmission. On the other hand, the transmitter memory 18 has the operation which memorizes the information peculiar to the transmission system 6 transmitted to the receiver equipment 1 and external connection equipment other than control data of the transmission system 6. The transmitter 19 has the operation which transmits the characteristic data of the transmission system 6 in which the kind of transmission system memorized by the video information and the voice modulation method of a signal format or aspect information, surround information, and said transmitter memory 18 other than a video signal and an audio signal is shown to the receiver 1. The receiver 20 has the operation which receives the signal and information which are transmitted from said transmitter 19. The receiving set memory 22



has the operation which memorizes the equipment information of receiver equipment. The OSD generating part 23 has the operation which displays arbitrary onscreen displays on the display 24. The receiving set microcomputer 4 based on the receiver equipment information on said receiving set memory 22, and the transmission system information and video voice received state information which are acquired from the receiver 20, The optimal setup information of the receiver equipment 1 and the transmission system 6 is chosen, the OSD generating part 23 is controlled, and it has the operation which displays "the optimal setup information of the receiver equipment 1 and the transmission system 6" on the display 24. When the receiver equipment 1 announces you "the optimal setup information of the receiver equipment 1 and the transmission system 6" to a user, it has the operation that a user can perform optimal setting out of each apparatus easily. The offer of information to these display top can also be canceled by a user's setting out.

[0028](Embodiment 9) Drawing 9 shows the remote control signal transmission method according to claim 9. In drawing 9, the receiver equipment 1 has the operation which reproduces an image and an audio signal with a display or a speaker. The arbitrary remote control transmitters 2 are turned to the receiver equipment 1, and are operated, and it has the operation which transmits a remote control infrared signal toward the receiver equipment 1. The receiving set light sensing portion 3 has the operation which changes into the remote control signal 10 the remote control infrared signal transmitted from said remote control transmitter 2. The receiving set microcomputer 4 receives and decodes said remote control signal 10, and has the operation which controls operation of receiver equipment. The receiving set memory 22 has the operation which memorizes the control remote control cord of a connection device. The remote control signal generation part 25 has the operation which generates the remote control signal 26 suitable for a connection device based on the connection device information accumulated in the receiving set memory 22. The remote control signal generation part 25 has the operation that the remote control signal 10 can be outputted as it is, by control of the receiving set microcomputer 4. (However, in subsequent explanation, all the output remote control signals from the remote control signal generation part 25 are written as the remote control signal 26 for simplification of explanation.) The receiving set connector 5 has the operation which connects the cable 8 for transmitting the remote control signal 26 to an external instrument to said receiver equipment 1. The transmission system 6 has the operation which transmits the information on a video signal, an audio signal, and others to said receiver equipment 1. The transmitter connector 7 has the operation which incorporates into a transmission system the remote control signal 26 transmitted from the receiver equipment 1 by connecting the cable 8. It is connected to said receiver equipment 1 and the transmission system 6, and the cable 8 has the operation which transmits the remote control signal 26 from the receiver equipment 1 to the transmission system 6, and has the

electrical specification that the remote control signal 26 does not deteriorate at the time of transmission. On the other hand, the transmitter memory 18 has the operation which memorizes the characteristic data of the transmission system 6 transmitted to the receiver equipment 1 and external connection equipment other than control data of the transmission system 6. The transmitter 19 has the operation which transmits the characteristic data of the transmission system 6 in which the kind of transmission system memorized by the video information and the voice modulation method of a signal format or aspect information, surround information, and said transmitter memory 18 other than a video signal and an audio signal is shown to the receiver 1. The receiver 20 has the operation which receives the signal and information which are transmitted from said transmitter 19. The receiving set memory 22 has the operation which memorizes the equipment information of receiver equipment. The OSD generating part 23 has the operation which displays arbitrary onscreen displays on the display 24. The receiving set microcomputer 4 based on the receiver equipment information on said receiving set memory 22, and the transmission system information and video voice received state information which are acquired from the receiver 20, The optimal setup information of the receiver equipment 1 and the transmission system 6 is chosen, the OSD generating part 23 is controlled, and it has the operation which displays "the optimal setup information of the receiver equipment 1 and the transmission system 6" on the display 24. When the receiver equipment 1 announces you "the optimal setup information of the receiver equipment 1 and the transmission system 6" to a user, it has the operation that a user can perform optimal setting out of each apparatus easily. The offer of information to these display top can also be canceled by a user's setting out. By the control remote control cord of the connection device which was accumulated in "the optimal setup information of the receiver equipment 1 and the transmission system 6", and the receiving set memory 23 as for the receiving set microcomputer 4. The remote control signal generation part 25 is controlled so that the transmission system 6 will be in the optimal established state, and it has the operation that the transmission system 6 can be changed into the optimal established state. Similarly, since the receiving set microcomputer 4 can also change the receiver equipment 1 into the optimal established state, it has the operation that the transmission system 6 and the receiver equipment 1 can be automatically changed into the optimal established state.

[0029](Embodiment 10) Drawing 10 shows the remote control signal transmission method according to claim 10. In drawing 10, the receiver equipment 1 has the operation which reproduces an image and an audio signal with a display or a speaker. The arbitrary remote control transmitters 2 are turned to the receiver equipment 1, and are operated, and it has the operation which transmits a remote control infrared signal toward the receiver equipment 1. The receiving set light sensing portion 3 has the operation which changes into the remote control signal 10 the remote control infrared signal transmitted from said remote control

transmitter 2. The receiving set microcomputer 4 receives and decodes said remote control signal 10, and has the operation which controls operation of receiver equipment. The receiving set memory 22 has the operation which memorizes the control remote control cord of a connection device. The remote control signal generation part 25 has the operation which generates the remote control signal 26 suitable for a connection device based on the connection device information accumulated in the receiving set memory 22. The remote control signal generation part 25 has the operation that the remote control signal 10 can be outputted as it is, by control of the receiving set microcomputer 4. The receiving set connector 5 has the operation which connects the cable 8 for transmitting the remote control signal 26 to an external instrument to said receiver equipment 1. The transmission system 6 has the operation which transmits the information on a video signal, an audio signal, and others to said receiver equipment 1. The transmitter connector 7 has the operation which incorporates into a transmission system the remote control electrical signal 26 transmitted from the receiver equipment 1 by connecting the cable 8. It is connected to said receiver equipment 1 and the transmission system 6, and the cable 8 has the operation which transmits the remote control signal 26 from the receiver equipment 1 to the transmission system 6, and has the electrical specification that the remote control signal 26 does not deteriorate at the time of transmission. On the other hand, the transmitter memory 18 has the operation which memorizes the characteristic data of the transmission system 6 transmitted to the receiver equipment 1 and external connection equipment other than control data of the transmission system 6. The transmitter 19 has the operation which transmits the characteristic data of the transmission system 6 in which the kind of transmission system memorized by the video information and the voice modulation method of a signal format or aspect information, surround information, and said transmitter memory 18 other than a video signal and an audio signal is shown to the receiver 1. The receiver 20 has the operation which receives the signal and information which are transmitted from said transmitter 19. The OSD generating part 23 can display arbitrary onscreen displays on the display 24, and has the operation which generates the virtual remote control display 27 controlled by the output of said remote control transmitter 2 for receiving sets. The receiving set microcomputer 4 based on the transmission system information acquired from the receiver 20, and the connection device information accumulated in the receiving set memory 22, It is set as the control code of the transmission system 6 to which setting out of said remote control signal generation part 25 was connected, and has the operation of generating the remote control signal 26, corresponding to operation of the user to the virtual remote control display 27. By these operations, even if there is no transmission system remote control, it has the operation that the virtual remote control that the transmission system 6 is controllable is realizable by operation of the receiver remote control transmitter 2. [0030](Embodiment 11) Drawing 11 shows the remote control signal transmission method

according to claim 11. In drawing 11, it has the same operation as Embodiment 11 except terminal 28 for receiving set memory writing. Said terminal 28 for receiving set memory writing is a terminal for writing new information in the accumulation data of the receiving set memory 22, and has the operation in which accumulation data is written by connecting the write-in apparatus 29 and performing write-in operation. In the write-in apparatus 29, they are apparatus, such as equipment only for writing, a personal computer, and a cellular phone. Although drawing 11 shows that the terminal 28 for receiving set memory writing differs from the receiving set connector 5, there is the method of writing a memory content by the method and receiver remote control operation using the receiving set connector 5, and changing. [0031](Embodiment 12) Drawing 12 shows the remote control signal transmission method according to claim 12. In drawing 12, the receiver equipment 1 has the operation which reproduces an image and an audio signal with a display or a speaker. The arbitrary remote control transmitters 2 are turned to the receiver equipment 1, and are operated, and it has the operation which transmits a remote control infrared signal toward receiver equipment. The receiving set light sensing portion 3 has the operation which changes the remote control infrared signal transmitted from said remote control transmitter 2 into the remote control signal 10 which is an electrical signal. Receiving set OR circuit 30 has the operation which outputs the OR signal of said remote control signal 10 and the remote control signal 12 inputted into the receiving set 1 through the cable 8. The receiving set microcomputer 4 receives and decodes the remote control signal which took OR by said receiving set OR circuit, and has the operation which controls operation of receiver equipment. The receiving set buffer 31 has the operation which outputs the remote control signal 10 to external equipment by low impedance. The receiving set connector 5 has the operation which connects the cable for transmitting the output of the receiving set buffer 31 to an external instrument to said receiver equipment 1. The transmission system 6 has the operation which transmits the information on a video signal, an audio signal, and others to said receiver equipment 1. The transmitter connector 7 has the operation which incorporates into a transmission system the remote control electrical signal transmitted from the receiver equipment 1 by connecting a cable. In the transmitter machine 6, the arbitrary remote control transmitters 2 are turned to the transmitter machine 6, and are operated, and it has the operation which transmits a remote control infrared signal toward the transmission system 6. The transmitter light sensing portion 11 has the operation which changes the remote control infrared signal transmitted from said remote control transmitter 2 into the remote control signal 12 which is an electrical signal. Transmitter OR circuit 32 has the operation which outputs the OR signal of said remote control signal 12 and the remote control signal 10 inputted into the transmitter machine 6 through the cable 8. The transmitter microcomputer 9 receives and decodes the remote control signal which took OR by said transmitter OR circuit, and has the operation which controls operation of receiver

equipment. The transmitter buffer 33 has the operation which outputs the remote control signal 12 to external equipment by low impedance. It is connected to said receiver equipment 1 and the transmission system 6, and the cable 8 has the operation which transmits and receives a remote control signal mutually to the receiver equipment 1 and the transmission system 6, and has the electrical specification that a remote control signal does not deteriorate at the time of transmission.

[0032]

[Effect of the Invention]As mentioned above, by transmitting a remote control signal to a transmission system from receiver equipment with a cable in a remote control signal transmission method according to this invention, It becomes possible to control other connected apparatus by a remote control signal, without adding special parts from the configuration status of the apparatus which is not taking into consideration that receiver equipment and a transmission system carry out remote control to other connection devices.

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[Translation done.]